

## Aristotle (384-322 BC)

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### Biography

Aristotle of Stagira is one of the two most important philosophers of the ancient world, and one of the four or five most important of any time or place. He was not an Athenian, but he spent most of his life as a student and teacher of philosophy in Athens. For twenty years he was a member of Plato's Academy; later he set up his own philosophical school, the Lyceum. During his lifetime he published philosophical dialogues, of which only fragments now survive. The 'Aristotelian corpus' (1462 pages of Greek text, including some spurious works) is probably derived from the lectures that he gave in the Lyceum.

Aristotle is the founder not only of philosophy as a discipline with distinct areas or branches, but, still more generally, of the conception of intellectual inquiry as falling into distinct disciplines. He insists, for instance, that the standards of proof and evidence for deductive logic and mathematics should not be applied to the study of nature, and that neither of these disciplines should be taken as a proper model for moral and political inquiry. He distinguishes philosophical reflection on a discipline from the practice of the discipline itself. The corpus contains contributions to many different disciplines, not only to philosophy.

Some areas of inquiry in which Aristotle makes a fundamental contribution are these:

(1) Logic. Aristotle's *Prior Analytics* constitutes the first attempt to formulate a system of deductive formal logic, based on the theory of the 'syllogism'. The *Posterior Analytics* uses this system to formulate an account of rigorous scientific knowledge. 'Logic', as Aristotle conceives it, also includes the study of language, meaning and their relation to non-linguistic reality; hence it includes many topics that might now be assigned to philosophy of language or philosophical logic (*Categories*, *De Interpretatione*, *Topics*).

(2) The study of nature. About a quarter of the corpus (see especially the *History of Animals*, *Parts of Animals*, and *Generation of Animals*; also *Movement of Animals*, *Progression of Animals*) consists of works concerned with biology. Some of these contain collections of detailed observations. (The *Meteorology* contains a similar collection on inanimate nature.) Others try to explain these observations in the light of the explanatory scheme that Aristotle defends in his more theoretical reflections on the study of nature. These reflections (especially in the *Physics* and in *Generation and Corruption*) develop an account of nature, form, matter, cause and change that expresses Aristotle's views about the understanding and explanation of natural organisms and their behaviour. Natural philosophy and cosmology are combined in *On the Heavens*.

(3) Metaphysics. In his reflections on the foundations and presuppositions of other disciplines, Aristotle describes a universal 'science of being *qua* being', the concern of the *Metaphysics*. Part of this universal science examines the foundations of inquiry into nature. Aristotle formulates his

doctrine of substance, which he explains through the connected contrasts between form and matter, and between potentiality and actuality. One of his aims is to describe the distinctive and irreducible character of living organisms. Another aim of the universal science is to use his examination of substance to give an account of divine substance, the ultimate principle of the cosmic order.

(4) Philosophy of mind. The doctrine of form and matter is used to explain the relation of soul and body, and the different types of soul found in different types of living creatures. In Aristotle's view, the soul is the form of a living body. He examines the different aspects of this form in plants, non-rational animals and human beings, by describing nutrition, perception, thought and desire. His discussion (in *On the Soul*, and also in the *Parva Naturalia*) ranges over topics in philosophy of mind, psychology, physiology, epistemology and theory of action.

(5) Ethics and politics (*Nicomachean Ethics*, *Eudemian Ethics*, *Magna Moralia*). In Aristotle's view, the understanding of the natural and essential aims of human agents is the right basis for a grasp of principles guiding moral and political practice. These principles are expressed in his account of human wellbeing, and of the different virtues that constitute a good person and promote wellbeing. The description of a society that embodies these virtues in individual and social life is a task for the *Politics*, which also examines the virtues and vices of actual states and societies, measuring them against the principles derived from ethical theory.

(6) Literary criticism and rhetorical theory (*Poetics*, *Rhetoric*). These works are closely connected both to Aristotle's logic and to his ethical and political theory.

## 1. Life

Aristotle was born in 384 bc, in the Macedonian city of Stagira, now part of northern Greece. In his lifetime the kingdom of Macedon, first under Philip and then under Philip's son Alexander ('the Great'), conquered both the Greek cities of Europe and Asia and the Persian Empire. Although Aristotle spent much of his adult life in Athens, he was not an Athenian citizen. He was closely linked to the kings of Macedon, whom many Greeks regarded as foreign invaders; hence, he was affected by the volatile relations between Macedon and the Greek cities, especially Athens.

Aristotle was the son of Nicomachus, a doctor attached to the Macedonian court. In 367 bc Aristotle came to Athens. He belonged to Plato's Academy until the death of Plato in 347; during these years Plato wrote his important later dialogues (including the *Sophist*, *Timaeus*, *Philebus*, *Statesman*, and *Laws*), which reconsider many of the doctrines of his earlier dialogues and pursue new lines of thought. Since there was no dogmatic system of 'Platonism', Aristotle was neither a disciple of such a system nor a rebel against it. The exploratory and critical outlook of the Academy probably encouraged Aristotle's own philosophical growth.

In 347 bc Aristotle left Athens, for Assos in Asia Minor. Later he moved to Lesbos, in the eastern Aegean, and then to Macedon, where he was a tutor of Alexander. In 334 he returned to Athens and founded his own school, the Lyceum. In 323 Alexander died; in the resulting

outbreak of anti-Macedonian feeling in Athens Aristotle left for Chalcis, on the island of Euboea, where he died in 322.

Aristotle married Pythias, a niece of Hermeias, the ruler of Assos. They had a daughter, also called Pythias. After the death of his wife, Aristotle formed an attachment to Herpyllis, and they had a son Nicomachus.

## **2. Order of Aristotle's works**

By the end of Aristotle's life the Lyceum must have become a well-established school. It lasted after Aristotle's death; his successor as head of the school was his pupil Theophrastus. Many of the works in the Aristotelian corpus appear to be closely related to Aristotle's lectures in the Lyceum. The polished character of some passages suggests preparation for publication (for example, *Parts of Animals* I 5), but many passages contain incomplete sentences and compressed allusions, suggesting notes that a lecturer might expand (for example, *Metaphysics* VII 13). We cannot tell how many of his treatises Aristotle regarded as 'finished' (see §11 on the *Metaphysics* and §21 on the *Ethics*).

It may be wrong, therefore, to ask about the 'date' of a particular treatise. If Aristotle neither published nor intended to publish the treatises, a given treatise may easily contain contributions from different dates. For similar reasons, we cannot plausibly take cross-references from one work to another as evidence of the order of the works. External, biographical considerations are unhelpful, since we lack the evidence to support any detailed intellectual biography of Aristotle.

A few points, however, may suggest a partial chronology.

- (1) Some of Aristotle's frequent critical discussions of Plato and other Academics may have been written (in some version) during Aristotle's years in the Academy. The *Topics* may reflect the character of dialectical debates in the Academy.
- (2) It is easier to understand the relation of the doctrine of substance in the *Categories* and *Physics* I–II to the doctrine and argument of *Metaphysics* VII if we suppose that *Metaphysics* VII is later.
- (3) The *Organon* (see §4) does not mention matter, perhaps because (a) Aristotle had not yet thought of it, or because (b) he regarded it as irrelevant to the topics considered in the *Organon*. If (a) is correct, the *Organon* precedes the works on natural philosophy.
- (4) Some of the observations used in Aristotle's biological works probably came from the eastern Aegean. Hence, Aristotle probably pursued his biological research during his years away from Athens. We might trace his biological interests to the Academy (see Plato's *Timaeus*); he may also have acquired them from his father Nicomachus, who was a doctor. Probably, then, at least some of the biological works (or versions of them) are not the latest works in the corpus.
- (5) The *Magna Moralia* (if it is genuine) and the *Eudemian Ethics* probably precede the *Nicomachean Ethics* (see §21).

The order in which Aristotle's works appear in the Greek manuscripts goes back to early editors and commentators (from the first century bcto the sixth century ad); it reflects their view not about the order in which the works were written, but about the order in which they should be studied. This entry generally follows the order of the corpus, except that it discusses On the Soul after the Metaphysics (see §17), not among the works on natural philosophy (where it appears in the manuscripts).

### 3. Appearances

The general aim of rational inquiry, according to Aristotle, is to advance from what is 'better known to us' to what is 'better known by nature' (see Physics I 1; Posterior Analytics 71b33; Metaphysics 1029b3). We achieve this aim if: (1) we replace propositions that we thought we knew with propositions that we really know because they are true and we understand them; (2) we find general principles that explain and justify the more specific truths that we began from; (3) we find those aspects of reality that explain the aspects that are more familiar to us.

The things better known to us in a particular area are the relevant 'appearances' (*phainomena*). Aristotle presents them through detailed collections of empirical data, reached as a result of 'inquiry' (*historia*; for example, Parts of Animals 646a8). Empirical inquiry proceeds from particular observations, by means of generalizations through induction (*epagōgē*) from these particular cases, until we reach experience (*empeiria*). Experience leads us to principles that are better known by nature (Prior Analytics 46a17); we also rely on it to test principles we have found (Generation of Animals 760b28).

Philosophical inquiry also relies on 'appearances'. However, the appearances that concern it are not empirical observations, but common beliefs, assumptions widely shared by 'the many and the wise'. The critical and constructive study of these common beliefs is 'dialectic'. Aristotle's method is basically Socratic. He raises puzzles in the common beliefs, looking for an account that will do them justice as a whole. Among common beliefs Aristotle considers the views of his predecessors (for example, Metaphysics I; On the Soul I; Politics II), because the puzzles raised by their views help us to find better solutions than they found.

Inquiry leads us to causes and to universals. Aristotle has a realist conception of inquiry and knowledge; beliefs and theories are true in so far as they grasp the reality that we inquire into (see Realism and antirealism §2). Universals and causes are 'prior by nature'; they are not created by, or dependent on, any theory, but a true theory must fit them.

If we attended only to Aristotle's remarks on what is better known to us and on the process of inquiry, we might regard his position as a form of empiricism (see Empiricism). But in his remarks on what is better known by nature, he insists on the reality of universals and on the importance of non-sensory forms of knowledge (see §15 on universals, §19 on thought).

### 4. Thought and language

One means of access to appearances, and especially to common beliefs, is the study of what words and sentences 'signify' (*sēmainein*). This is part of 'logic' (*logikē*, derived from *logos*,

which may be translated ‘word’, ‘speech’, ‘statement’, ‘argument’ or ‘reason’: see Logos), which is discussed in the first section of Aristotle’s works (Categories, De Interpretatione, Prior Analytics, Posterior Analytics, Topics). This section of the corpus came to be called the ‘Organon’ (‘instrument’), because logic, as Aristotle conceives it, concerns statements and arguments in general, without restriction to any specific subject matter; it is therefore an instrument of philosophical inquiry in general, rather than a branch of philosophy coordinate with natural philosophy or ethics. The Organon includes some elements of philosophy of language, as well as formal logic (syllogistic; see §5) and epistemology (see §6).

According to Aristotle’s account of signification (see especially De Interpretatione 1–4), as commonly understood, the word ‘horse’ signifies horse by signifying the thought of horse; in using the word, we communicate thoughts about horses. When the thoughts about horses we communicate are true, we communicate truths about the universal horse; even when our thoughts are not completely true, we may signify the same universal horse.

To understand the signification of a name ‘*F*’, we look for the corresponding definition (*logos*, *horismos*) of *F*. Aristotle distinguishes nominal definitions, stating the beliefs associated with the name, from real definitions, giving a true account of the universal that underlies the beliefs embodied in the nominal definition (see Posterior Analytics II 8–10. Aristotle himself does not use the labels ‘nominal definition’ and ‘real definition’.).

Not every name corresponds to one nominal and one real definition. Some names correspond to no genuine universal; ‘goatstag’ signifies (in one way) animals that are both goats and stags, but it does not signify a genuine universal, since there is no natural kind of goatstag. Other names correspond to more than one universal, as ‘chest’ signifies both a container and a part of an animal. Chests are ‘homonymous’ (*homōnyma*) or ‘multivocal’ (*pollachōs legomena*; ‘spoken of in many ways’); more than one definition is needed to capture the signification of the name. By contrast, since only one definition corresponds to the name ‘horse’, horses are ‘synonymous’ (Categories 1).

Other philosophers make serious errors, Aristotle believes, because they suppose they can give a single account of things or properties that are really multivocal. Once we see that different *F*s are *F* in different ways, we see that different, although (in many cases) connected, accounts of what it is to be *F* must be given. Some philosophically important cases of multivocity are cause (Aristotle’s doctrine of the four causes; see §9), being (the doctrine of the categories; see §7) and good (the criticism of Plato’s belief in a Form of the Good; Nicomachean Ethics I 6).

## 5. Deduction

Part of logic, as Aristotle conceives it, is the study of good and bad arguments. In the Topics Aristotle treats dialectical arguments in general. In the Prior Analytics he examines one type of argument, a ‘deduction’ (*syllogismos*; literally, ‘reasoning’, hence the standard term ‘syllogism’). This is an argument in which, if propositions *p* and *q* are assumed, something else *r*, different from *p* and *q*, follows necessarily because of the truth of *p* and *q* (Prior Analytics 24b18–20, paraphrased). Aristotle insists that it is not possible for the premises of a deduction to be true and the conclusion false (‘follows necessarily’); that a deduction must have

more than one premise ('if  $p$  and  $q$  are assumed'); that the conclusion cannot be identical to any premise ('different from  $p$  and  $q$ '); and that no redundant premises are allowed ('because of the truth of  $p$  and  $q$ '). He takes deductions to express affirmative or negative relations between universals, taken either universally ('Animal belongs to every (no) man') or not universally ('Animal belongs (does not belong) to some man'). He takes the affirmative and negative claims to imply existence (so that 'Biped belongs to some dodo' follows from 'Biped belongs to every dodo'; the latter affirmation is not equivalent, therefore, to 'If anything is a dodo, it is biped').

These different features of an Aristotelian deduction differentiate Aristotle's account of a deduction from a more familiar account of deductively valid arguments. An argument may be valid even if it is redundant, or a premise is identical to the conclusion, or it has only one premise, or it is about particulars, or it contains neither 'some' nor 'every' nor 'belongs'; but no such argument is an Aristotelian deduction. Aristotle's theory of the different forms of deduction (often called 'the moods of the syllogism') examines the various forms of argument that necessarily preserve the truth of their premises. He begins from 'complete' (or 'perfect') deductions whose validity is evident, and classifies the different types of arguments that can be derived from (shown to be equivalent to) the complete deductions. He also explores the logical relations between propositions involving modalities ('Necessarily (possibly) animal belongs to every man' and so on). Since Aristotle accepts this relatively narrow account of a deduction, his exploration of the different forms of deduction is not a theory of valid arguments in general; the Stoics come much closer to offering such a theory (see Stoicism §11; Logic, ancient).

Aristotle's theory of deduction is developed for its own sake, but it also has two main philosophical applications. (1) Deduction is one type of argument appropriate to dialectic (and, with modifications, to rhetoric; see §29). Aristotle contrasts it with inductive argument (also used in dialectic), in which the conclusion does not follow necessarily from the premises, but is made plausible by them. (2) It is essential for demonstration (*apodeixis*), which Aristotle takes to be the appropriate form for exhibiting scientific knowledge.

## 6. Knowledge, science and demonstration

The progress from what is known to us to what is known by nature aims at *epistēmē*, the scientific knowledge whose structure is exhibited in the demonstrative pattern described in the Posterior Analytics. A demonstration is a deduction in which the premises are necessarily true, prior to and better known than the conclusions, and explanatory of the conclusions derived from them. Aristotle assumes that if I know that  $p$ , then I can cite some justification  $q$ , to justify my belief that  $p$ , and I also know why  $q$  justifies  $p$  (Posterior Analytics I 2). The right sort of justification relies on things better known by nature – the general laws and principles that explain the truth of  $p$ . Since these are embodied in demonstrations, grasp of a demonstration of  $p$  expresses knowledge of  $p$ . Aristotle's theory of demonstration, then, is not intended to describe a procedure of scientific inquiry that begins from appearances; it is an account of the knowledge that is achieved by successful inquiry.

To show that a deduction is a demonstration, we must show that its premises are better known than the conclusion. Sometimes we can show this by demonstrating them from higher premises

that are even better known. This process of justification, Aristotle claims, must be linear and finite. A circular 'justification' must eventually 'justify' a given belief by appeal to itself, and an infinite regress imposes on us a task that we can never complete. Since, therefore, neither a circle nor an infinite regress can really justify, a proper justification must ultimately appeal to primary principles of a science.

These primary principles are 'assumptions' (*hypotheseis*); we must see that they are better known and prior to other truths of a science, without being derived from any further principles. Since they are the basis of all demonstration, they cannot themselves be demonstrated; Aristotle claims that we have non-demonstrative understanding (*nous*:Posterior Analytics II 19) of the ultimate principles of each science (see *Nous*).

How are we entitled to claim understanding of an ultimate principle? Aristotle believes that the principles of a science are reached from appearances (perceptual or dialectical or both), which are the starting points known to us. He may believe that this relation of the principles to appearances justifies us in accepting them as first principles and in claiming to have understanding of them. This explanation, however, does not easily fit Aristotle's demand for linear and finite chains of justification. That demand suggests that the assumptions of a science must be self-evident (seen to be true without any inferential justification), so that his conception of knowledge expresses a foundationalist position (see Foundationalism §3). (On difficulties in foundationalism see Agrippa.)

Although Aristotle's aim of reaching a demonstrative science reveals some of his epistemological doctrines and assumptions, it does not evidently influence most of the structure or content of most of the surviving treatises. In his main philosophical works, the influence of dialectical methods and aims is more apparent.

## 7. Categories and beings

Part of the task of logic is to explain the nature of predication ('*A* is *B*', analysed by Aristotle as '*B* is predicated of *A*' or '*B* belongs to *A*', as in 'Animal belongs to every man'), which is presupposed by complex *logoi*(statements and arguments). In the *Categories* (*katēgoriai*; predications), Aristotle introduces ten 'categories' (usually called *schēmata tēs katēgorias*, 'figures (that is, types) of predication'). The categories correspond to different sorts of words (for example, count-nouns, adjectives, verbs) and to different grammatical functions (for example, subject, predicate), but they primarily classify the different non-linguistic items introduced in predications. The sentences 'Socrates is a man' and 'Socrates is a musician' are grammatically similar, but they introduce different sorts of things; the first predicates a second substance of a first substance, whereas the second predicates a non-substance of a first substance.

The first category is called *ousia* (literally, 'being'), which is translated into Latin as 'substantia', and hence usually called 'substance' (see Substance §1). The nine non-substance categories include quality, quantity and relative (the only ones that Aristotle refers to often; the categories are listed in *Categories* 4, *Topics* I 9). Each category contains both particulars and universals. The statement that this individual man is an animal predicates a second substance (that is, a

universal in the category of substance) of a first substance (that is, a particular in the category of substance). ‘White is a colour’ predicates one universal quality of another.

The categories display the multivocity of beings (see §4). Whereas animals constitute an ordinary univocal genus with a single definition, beings do not constitute an ordinary genus; hence there is no single account of what it is for something to be a being. Aristotle believes Plato mistakenly pursued a single account of beings; the theory of categories is meant to avoid Platonic errors.

In marking categorial divisions, Aristotle is influenced by grammar and syntax, but also by his ontology – his classification of beings. This classification rests on his view of nature and change, which clarifies his analysis of predication.

## 8. Change and substance

Aristotle’s *Physics* discusses nature, *physis*. The nature of *x* is a principle (or ‘source’; *archē*), internal to *x*, of change and stability in *x*; hence the inquiry into nature leads to a discussion of change in natural substances (the elements, plants and animals). Aristotle proceeds dialectically, raising and solving puzzles involved in the understanding of natural change. In solving the puzzles, he introduces the different types of beings that are presupposed by a coherent account of natural change.

In *Physics* I 7–8, Aristotle analyses a simple example of change – Socrates changing from being pale to being tanned. This change involves a subject (or ‘underlying thing’; *hypokeimenon*), Socrates, who loses one contrary (his pale colour) and acquires another contrary (his tan). Neither of the contraries persists, but the subject persists (otherwise there would not be a change in Socrates). This particular subject that persists through change is what the *Categories* calls a first substance. First substances differ both from second substances and from non-substances by being capable of undergoing change; they persist while receiving opposites (as Socrates is first pale and then tanned). They cannot, however, remain in existence irrespective of any properties gained or lost; Socrates’ ceasing to be a man is not a change in Socrates, but the perishing of Socrates.

The properties that a first substance cannot lose without perishing constitute (approximately) the essence of that first substance (see Essentialism). These essential properties define a kind to which the first substance belongs. A kind may be a species (*eidos*), for example, man or horse, or a genus (*genos*), for example, animal. In predicating a second substance of a first substance (as in ‘Socrates is a man’), we place the first substance in the kind it belongs to. If we predicate one of the contraries that the first substance can lose without perishing, we introduce an item (Socrates’ pale colour, his particular height, his ignorance, his being the husband of Xanthippe) in one of the non-substance categories (quality, quantity, relative, and so on). The kinds to which these non-substantial items belong are non-substantial universals.

Aristotle also examines the coming to be and perishing of a first substance. Here again, he distinguishes a persisting subject and two contraries. If we make a statue from bronze, the lump of bronze (the subject) acquires the shape of the statue, and loses the shapelessness it had, and so



changes between contraries. But although the lump remains in existence, a new subject, the statue, has come into being. In this case, the subject of the change is the matter (*hylē*), and what it acquires is the form (*eidos*, also rendered ‘species’).

This analysis of change suggests an argument (Physics II 1) to show that the genuine subject, and hence the genuine substance, is the matter, whereas the apparent substance (for example, the statue) is simply matter with a certain shape. Socrates does not become another subject if he changes shape; hence (we may argue) the lump of bronze does not become another subject simply by acquiring the shape of a statue. Similarly, then, a natural organism might be understood as a piece of matter shaped in a certain way so as to embody Socrates. Natural organic ‘substances’, such as Socrates and this tree, turn out to be not genuine subjects, but mere configurations of the matter that is the real substance.

Aristotle does not endorse this eliminative attitude to natural organic substances. He uses the argument to raise a puzzle about whether matter or form is substance. He discusses this puzzle in Metaphysics VII (see §12–14). This discussion relies on his account of causation and explanation.

## 9. Causes

When we correctly answer questions such as ‘Why does this event happen?’ or ‘Why is this object as it is?’, we state the cause (or explanation; *aition*) of the event or object. Aristotle believes that causes are multivocal (see Physics II 3; Metaphysics I 3). Different accounts of a cause correspond to different answers to why-questions about (for example) a statue. (1) ‘It is made of bronze’ states the material cause. (2) ‘It is a statue representing Pericles’ states the formal cause, by stating the definition that says what the thing is. (3) ‘A sculptor made it’ states the ‘source of change’, by mentioning the source of the process that brought the statue into being; later writers call this the ‘moving cause’ or ‘efficient cause’. (4) ‘It is made to represent Pericles’ states ‘that for the sake of which’, since it mentions the goal or end for the sake of which the statue was made; this is often called the ‘final’ (Latin *finis*; ‘end’) cause.

Each of the four causes answers a why-question. Sometimes (as in our example) a complete answer requires all four causes. Not all four, however, are always appropriate; the (universal) triangle, for example, has a formal cause, stating its definition, but no efficient cause, since it does not come into being, and no final cause, since it is not made to promote any goal or end.

Some have claimed that Aristotle’s ‘four causes’ are not really causes at all, pointing out that he takes an *aition* to be available even in cases where the why-question (for example, ‘Why do the interior angles of this figure add up to two right angles?’) does not seek what we would call a cause (in Aristotle’s division, an efficient cause). When explanations of changes are being sought, however, Aristotle seems to provide recognizably causal explanations. Even the *aitia* (material, formal, final) that do not initially seem to be causes turn out to play an important role in causal explanation; for this reason, the label ‘four causes’ gives a reasonably accurate impression of Aristotle’s doctrine.

His comparison between artefacts and natural organisms clarifies his claims about formal and final causes. The definition of an artefact requires reference to the goal and the intended function. A hammer's form and essence is a capacity to hammer nails into wood. The hammer was designed to have this capacity for performing this function; and if this had not been its function, it would not have been made in the way it was, to have the properties it has. The form includes the final cause, by specifying the functions that explain why the hammer is made as it is.

Similarly, Aristotle claims, a natural organism has a formal cause specifying the function that is the final cause of the organism. The parts of an organism seem to perform functions that benefit the whole (the heart pumps blood, the senses convey useful information). Aristotle claims that organs have final causes; they exist in order to carry out the beneficial functions they actually carry out. The form of an organism is determined by the pattern of activity that contains the final causes of its different vital processes. Hence Aristotle believes that form as well as matter plays a causal role in natural organisms.

To claim that a heart is for pumping blood to benefit the organism is to claim that there is some causal connection between the benefit to the organism and the processes that constitute the heart's pumping blood. Aristotle makes this causal claim without saying why it is true. He does not say, for instance, either (1) that organisms are the products of intelligent design (as Plato and the Stoics believe), or (2) that they are the outcome of a process of evolution.

Aristotle's account of causation and explanation is expressed in the content and argument of many of his biological works (including those connected with psychology). In the *Parts of Animals* and *Generation of Animals* for instance, he examines the behaviour and structure of organisms and their parts both to find the final causes and to describe the material and efficient basis of the goal-direction that he finds in nature (*Parts of Animals* I 1). He often argues that different physiological processes in different animals have the same final cause.

Some ascribe to Aristotle an 'incompatibilist' view of the relation between final causes and the underlying material and efficient causes. Incompatibilists concede that every goal-directed process (state, event) requires some material process (as nutrition, for example, requires the various processes involved in digesting food), but they argue that the goal-directed process cannot be wholly constituted by any material process or processes; any process wholly constituted by material processes is (according to the incompatibilist) fully explicable in material-efficient terms, and therefore has no final cause.

Probably, however, Aristotle takes a 'compatibilist' view. He seems to believe that even if every goal-directed process were wholly constituted by material processes, each of which can be explained in material-efficient terms, the final-causal explanation would still be the only adequate explanation of the process as a whole. According to this view, final causes are irreducible to material-efficient causes, because the explanations given by final causes cannot be replaced by equally good explanations referring only to these other causes. This irreducibility, however, does not require the denial of material constitution.

## **10. Change**

Aristotle studies nature as an internal principle of change and stability; and so he examines the different types of change (or ‘motion’; *kinēsis*) that are found in the natural elements and in the natural organisms composed of them. In Physics III 1 he defines change as ‘the actuality of the potential *qua* potential’. His definition marks the importance of his views on potentiality (or ‘capacity’; *dynamis*) and actuality (or ‘realization’; *energeia* or *entelecheia*) (see Metaphysics IX 1–9).

The primary type of potentiality is a principle (*archē*) of change and stability. If *x* has the potentiality *F* for *G*, then (1) *G* is the actuality of *F*, and (2) *x* has *F* because *G* is the actuality of *F*. Marathon runners, for instance, have the potentiality to run 26 miles because they have been trained to run this distance; hearts have the capacity to pump blood because this is the function that explains the character of hearts. In these cases, potentialities correspond to final causes.

Potentiality and possibility do not, therefore, imply each other. (1) Not everything that is possible for *x* realizes a potentiality of *x*. Perhaps it is possible for us to speak words of Italian (because we recall them from an opera) without having a potentiality to speak Italian (if we have not learnt Italian). (2) Not everything that *x* is capable of is possible for *x*; some creatures would still have a potentiality to swim even if their environment lost all its water.

These points about potentiality help to clarify Aristotle’s definition of change. The building of a house is a change because it is the actuality of what is potentially built in so far as it is potentially built. ‘What is potentially built’ refers to the bricks (and so on). The completed house is their complete actuality, and when it is reached, their potentiality to be built is lost. The process of building is their actuality in so far as they are potentially built. ‘In so far...’ picks out the incomplete actuality that is present only as long as the potentiality to be built (lost in the completed house) is still present. Aristotle’s definition picks out the kind of actuality that is to be identified with change, by appealing to some prior understanding of potentiality and actuality, which in turn rests on an understanding of final causation.

In the rest of the Physics, Aristotle explores different properties of change in relation to place and time. He discusses infinity and continuity at length, arguing that both change and time are infinitely divisible. He tries to show that the relevant type of infinity can be defined by reference to potentiality, so as to avoid self-contradiction, paradox or metaphysical extravagance. In his view, infinite divisibility requires a series that can always be continued, but does not require the actual existence of an infinitely long series. Once again, the reference to potentiality (in ‘can always...’) has a crucial explanatory role.

## 11. Metaphysics

Some of the basic concepts of the Categories and Physics – including substance, particular, universal, form, matter, cause and potentiality – are discussed more fully in the Metaphysics. This is a collection of fourteen books, some of them loosely connected. Aristotle probably did not deliver a course of lectures in the order of the present treatise. Parts of book I are almost repeated in book XIII. Book V is a ‘philosophical dictionary’ that seems to interrupt the

argument of books IV and VI. Book XI summarizes parts of book IV. Books II and XI were probably not written entirely by Aristotle.

Still, whatever their literary origins, all these books have a common subject matter, since they all contribute to the universal science that studies the common presuppositions of the other sciences. This universal science has four names. (1) 'First philosophy': it studies the 'first principles' and 'highest causes' (including the four causes of the Physics) presupposed by the other sciences. (2) 'The science of being': every science presupposes that it studies some sort of being, and the science of being examines and defends this presupposition. (3) 'Theology': first philosophy is not only first in so far it is most universal, but also in so far as it deals with the primary sort of being, the sort on which all other beings depend. The primary sort of being is substance, and the primary sort of substance is divine substance; hence the science of being must study divine substance. (4) 'Metaphysics' (*ta meta ta physika*; 'the things after the natural things'): it is 'after' or 'beyond' the study of nature because (a) as theology, it studies entities outside the natural order, and (b) as first philosophy, it starts from the study of nature (which is prior and better known 'to us') and goes beyond it to its foundations and presuppositions (which are prior and better known 'by nature'; see §3).

The first three of these names are used by Aristotle himself (Metaphysics IV 1–3, VI 1). The fourth was given to the treatise in antiquity (at an uncertain date); its use of 'after' captures Aristotle's different claims about the relation of the universal science to other sciences.

The universal science is the science of being *qua* being – that is, being in so far as it is being – just as mathematics is the science of some beings *qua* mathematical objects (see §16) and physics is the science of some beings *qua* changeable. The science of being studies the beings that are also studied by other sciences, but it isolates the relevant properties of beings by a different level of abstraction; it does not rely on the fact that they have the properties of mathematical or natural objects, but simply on the fact that they are beings studied by a science (Metaphysics IV 1–2).

A special science assumes that it begins with a subject that has properties. The universal science is the science of being because it studies the sort of subject that is presupposed by the other sciences; and it is primarily the science of substance because substance is the primary sort of being. Aristotle's analysis of change in Physics I introduces substances as subjects; the Metaphysics asks what sorts of subjects and substances must be recognized by special sciences.

Aristotle argues that if we are to signify a subject, it is impossible for each of its properties both to belong and not to belong to it. This principle is often called the 'Principle of Non-Contradiction' (Metaphysics IV 3–4). To defend the principle, Aristotle considers an opponent who is willing to assert that a single subject, man, is both a bipedal animal and not a biped animal. If the opponent really says this about a single subject, then, when he uses 'man', he must signify one and the same subject, man. If he agrees that in using 'man' he signifies a biped animal, then he cannot also deny that man is a biped animal; for if he denies this, he can no longer say what 'man' signifies, and hence he cannot say what subject it is that he takes to be both a biped animal and not a biped animal. This property (which one cannot also deny of a

subject) is an essential property. Hence, the attempt to reject subjects with essential properties is self-undermining.

Subjects of change must also, according to Aristotle, have objective properties (that is, properties that they have whether or not they appear to have them). An argument against Protagoras seeks to show that any attempt to reject objective properties undermines itself (Metaphysics IV 5). Protagoras denies that there are any objective properties, because he claims that how things appear to someone is how they are. If he is to maintain the infallibility of appearances against any possibility of correction, then, Aristotle argues, he must claim that it is possible for the same subject to change in every respect at every time (to match different appearances). This is possible, however, only if the same subject can remain in being, but change in all respects. Aristotle replies that if the same subject persists, it must keep the same essential property (the 'form'); hence it cannot change in every respect (IV 5).

## **12. From being to substance**

In Metaphysics IV 2 and VII 1 Aristotle argues that, since substance is the primary type of being and other beings are in some way dependent on substances, the science of being must primarily be concerned with substance. The arguments of IV 4–5 describe some features of substances; they must be subjects with stable, objective, essential properties. Books VII–IX describe these subjects more fully, by re-examining the conception of substance that is presented in the Categories and Physics (see §§7–8).

Aristotle observes that we regard substance both as 'a this' and as 'essence' (or 'what it is'). We might assume that these two descriptions pick out two sorts of substances – a particular subject ('this') and a universal ('what it is'), corresponding to the first and second substances of the Categories. Aristotle, however, insists that his question 'What is substance?' will be satisfactorily answered only when we have found the one thing that best satisfies the conditions for being both a subject (a 'this') and an essence ('what it is'). Whatever best satisfies these conditions is primary substance.

The different candidates that Aristotle considers for this role are matter, form and the compound of the two. He argues against the first and third candidates, and defends the second. He regards matter and compound as types of substance, but argues that they are secondary to form because they do not meet the relevant conditions to the same degree. To show that form is primary substance, he argues that a form is both a subject and an essence of the right sort. In books VIII–IX he clarifies his answer by identifying form with the actuality for which the matter is the potentiality.

## **13. Why is form substance?**

In claiming that form is substance, Aristotle relies on the connections between form, cause, essence and identity. He rejects the eliminative view (§8) that the so-called 'coming-to-be' or 'perishing' of an artefact or organism is simply an alteration of the matter. According to the eliminative view, this alteration does not involve the existence or non-existence of a distinct substance, any more than Socrates' coming to be musical involves the existence of a distinct

substance, musical Socrates. Aristotle replies that the production of an artefact and the generation of an organism introduce a new subject, a substance that is neither identical to nor wholly dependent on the matter that constitutes it at a time (see Identity §2). Although this statue of Pericles has come into being from a particular piece of bronze, we may repair the statue by replacing damaged bits; we preserve the same statue but we cause a different bit of bronze to constitute it. Similarly, an organism remains in existence as long as it replaces its matter with new matter: it persists as long as its form persists (Generation and Corruption I 5).

When Aristotle speaks of the relation of form to matter, he may refer to either of two kinds of matter: (1) the proximate, organic matter (for example, the organs and limbs making up the organic body); and (2) the remote, non-organic matter (for example, blood, earth, water) of which the organic body is made. Remote matter can exist without the form of the organism, but the organism can persist without any particular piece of remote matter. Proximate matter cannot exist without the form (since it is the function of an arm or heart that makes it the limb or organ it is); the form is the actuality of which the proximate matter is the potentiality (On the Soul 412a10; Metaphysics 1038b6, 1042b10).

The role of the form in determining the persistence of an organism results from its role as the source of unity. The form, including the organism's vital functions, makes a heap of material constituents into a single organism (Metaphysics VII 16). A collection of flesh and bones constitutes a single living organism in so far as it has the form of a man or a horse; the vital functions of the single organism are the final cause of the movements of the different parts. The organism remains in being through changes of matter, as long as it retains its formal, functional properties. Since the structure, behaviour and persistence of the organism must be understood by reference to its form, the form is irreducible to matter (see §9); the organism, defined by its form, must be treated as a subject in its own right, not simply as a heap of matter.

These facts about organisms explain why Aristotle sees a close connection between primary substance and form. Organisms are substances primarily because of their formal properties, not because of their material composition; hence we cannot identify all the basic subjects there are unless we recognize the reality of formal properties and of subjects that are essentially formal.

#### **14. What are substantial forms?**

The conclusion that primary substance and form are closely connected, however, explains only why some substances are essentially formal; it does not explain why form itself is substance. To explain this further claim, we need to decide whether Aristotle regards a substantial form as (1) a species form (shared by all members of a given species, for example, the form of man or horse), normally taken to be a universal, or as (2) a particular form, proprietary to (for example) Socrates. (See Metaphysics VII 10–16, XII 5, XIII 10, Generation of Animals IV 3 for important evidence.)

Some points favouring the 'universal solution' are the following. (1) Aristotle often contrasts the form with the compound of form and matter, and describes particulars as compounds; hence he apparently does not regard particulars as forms. (2) Similarly, he says that a particular differs from a universal in having both form and matter; hence no particular seems to be simply a form.

(3) He says the form is what is specified in a definition, but there is no definition of a particular; hence a particular apparently cannot be a form. (4) He says that substance is prior in knowledge to non-substance, but scientific knowledge of particulars is impossible; hence they apparently cannot be substances, and only a universal can be a substance.

In favour of the 'particular solution' it may be argued: (1) a substance must be a subject, whereas all universals are said of subjects; (2) a substance must be a 'this', as opposed to a 'such', and hence, apparently, some sort of particular; (3) Aristotle argues at length that no universal can be a substance.

We might be tempted to conclude that Aristotle's position is inconsistent. His conviction that substance as 'this' and substance as 'what is it' must be the same thing leads him to insist that the successful candidate for substance must satisfy the criteria for being both a this (a subject, and hence a particular) and an essence (a property, and hence a universal). If one and the same thing cannot satisfy both criteria, then no one thing can satisfy all Aristotle's conditions for being a substance.

We need not draw this conclusion, however. We can maintain that Aristotle consistently favours the universal solution, if we can show: (1) a 'this' need not be a particular; (2) some universals are subjects; (3) a species form is not the sort of universal that cannot be a substance.

We can maintain that he consistently favours the particular solution, if we can show the following. (1) The contrast between form and matter does not imply that they are always mutually exclusive; some forms may be constituted by, or embodied in, particular bits of matter. Sometimes, indeed, Aristotle speaks as though a form is a subject that can persist and perish and can exchange its matter. (2) The sense in which particulars do not allow definition and scientific knowledge does not prevent them from also being, in an appropriate sense, prior in definition and knowledge to universals (Metaphysics XIII 10 may attribute the relevant priority to particular substances).

These two solutions are different ways of expressing Aristotle's belief that substances are basic. Both his metaphysics and his natural philosophy express and defend the conviction that natural organisms and their kinds are substances because they are fundamental; they are fundamental because they are irreducible to their constituent matter. It is more difficult to decide whether the individuals or their kinds are more fundamental. Perhaps, indeed, we ought not to decide; different things may be fundamental or irreducible in different ways.

## **15. Universals, Platonic Forms, mathematics**

These disputes partly concern Aristotle's attitude to the reality of universals. One-sided concentration on some of his remarks may encourage a nominalist or conceptualist interpretation (see Nominalism §§1, 2). (1) He rejects Plato's belief (as he understands it) in separated universal Forms (see Plato §§10, 12–16; Forms, Platonic), claiming that only particulars are separable. (2) In Metaphysics VII 13–16 he appears to argue that no universal can be a substance. (3) He claims that the universal as object of knowledge is – in a way – identical to the knowledge of it (On the Soul 417b23).

Other remarks, however, suggest realism about universals. (4) He claims they are better known by nature; this status seems to belong only to things that really exist. (5) He believes that if there is knowledge, then there must be universals to be objects of it; for our knowledge is about external nature, not about the contents of our own minds.

Aristotle's position is consistent if (1)–(3) are consistent with the realist tendency of (4)–(5). The denial of separation in (1) allows the reality of universals. Similarly, (2) may simply say that no universals are primary substances (which are his main concern in *Metaphysics* VII). And (3) may simply mean (depending on how we take 'in a way') that the mind's conception of the extra-mental universal has some of the features of the universal (as a map has some of the features of the area that it maps). While Aristotle denies that universals can exist without sensible particulars to embody them, he believes they are real properties of these sensible particulars.

He offers a rather similar defence of the reality, without separability, of mathematical objects (*Physics* II 2; *Metaphysics* XIII 3). While agreeing with the Platonist view that there are truths about, for example, numbers or triangles that do not describe the sensible properties of sensible objects, he denies that these truths have to be about independently-existing mathematical objects. He claims that they are truths about certain properties of sensible objects, which we can grasp when we 'take away' (or 'abstract') the irrelevant properties (for example, the fact that this triangular object is made of bronze). Even though there are no separate objects that have simply mathematical properties, there are real mathematical properties of sensible objects.

## **16. Metaphysics: God**

When Aristotle claims that first philosophy is also theology (see §11), he implies that the general discussion of being and substance is the basis for the special discussion of divine substance. (Hence later writers distinguish 'special metaphysics', dealing with God, from 'general metaphysics', dealing with being in general.) The different features of substance explained in *Metaphysics* VII–IX are included in the divine substance of XII. (1) Primary substance is to be identified in some way with form rather than with matter or with the compound of form and matter; divine substance is pure form without matter. (2) Primary substance is in some way numerically one, a 'this' rather than a 'such'; divine substance is completely one and indivisible. (3) Primary substance is in some way actuality rather than potentiality; divine substance is pure actuality with no potentiality. (4) Primary substance is soul rather than body (see §17); divine substance is pure intellect without sense or body.

In each case the properties of primary substance are found in a sensible substance (an animal or a plant) only in so far as they belong to an object that also has other properties; hence primary substance in sensible reality is the form and actuality of an object (a horse, for example) that also has matter and potentiality. In divine substance, however, each feature is found in separation from these other properties; that is why a divine substance lacks matter, multiplicity, parts or potentiality. Aristotle argues that a substance with these pure substantial properties must exist if any sensible substances are to exist; for the existence of potentialities that can be actualized presupposes the existence of an actuality that does not itself include any potentiality (to avoid an infinite regress).



Since this primary type of substance is divine, it is what traditional belief in the Olympian gods was about, what the Presocratics were talking about when they spoke of 'the divine', and what Plato was talking about in speaking of a supreme god. Aristotle mentions the traditional Olympian gods without committing himself to acceptance of the traditional conception of them. He rejects anthropomorphic views of the gods, but he speaks of the divine nature as a kind of mind. He believes that there is something divine about the order and workings of nature, and still more divine in the heavenly substances (Parts of Animals I 5). Although he continues to speak of gods in the plural, he also speaks of one divine mind as the ultimate cause of the whole universe; these remarks help to justify the later interpreters who take him to speak of the one God who is the subject of (for example) Aquinas' 'Five Ways' (Summa Theologiae 1a q.2 a.3) (see Aquinas, T. §11).

Aristotle's God is the ultimate cause of the physical universe, but not its creator (as Plato's demiurge is), since Aristotle believes the universe is eternal. Nor does Aristotle suggest that God has providence or foreknowledge concerned with future contingent events. But he believes that the physical universe is dependent on God. In Physics VIII he argues that the explanation of motion requires recognition of a first cause of motion, and in Metaphysics XII this first cause is identified with divine, immaterial, substance. This first mover is itself unmoved; it initiates motion only as an object of love initiates motion by attraction. It is the ultimate final cause of the various movements in the universe.

In treating the divine substance as a god, and hence as a being with a soul and an intellect, Aristotle attributes some mental life to it. But since it would be imperfect if it thought of objects outside itself (because it would not be self-sufficient), it thinks only of its own thinking. This restriction, however, is not as severe as it may seem, since Aristotle believes that the various objects of thought are in some way identical to the mind that thinks them (see §15). In so far as God thinks of his own mind, he thereby also contemplates the order of the universe as a whole; this is the order that the different movements in the universe seek to embody.

Sometimes (as in Physics VIII) Aristotle argues for a single first mover. In Metaphysics XII, however, he argues that an unmoved mover must be postulated for each of the distinct movements of the heavenly bodies. This astronomical interpretation of his theological doctrine is difficult to reconcile with his belief, reaffirmed in Metaphysics XII 10, that in some way the universe is unified by a single first unmoved mover.

## **17. Soul and body**

Aristotle's treatise On the Soul is placed among the works on natural philosophy, but should be read with Metaphysics VII–IX. In Aristotle's view, disputes about soul and body are simply a special case of the more general disputes about form and matter. He rejects both the Presocratic materialist assumption that the soul is simply non-organic matter, and the Platonic dualist claim that it must be something entirely non-bodily. He argues that soul is substance because it is the form of a natural body, and that the body is the matter informed by the soul. Although the soul is a substance distinct from the non-organic body (the collection of non-organic matter belonging

to a living organism; see §13), it is not immaterial (if being immaterial excludes being composed of matter), nor is it independent of some non-organic body or other.

Aristotle assumes that the soul is the primary principle of life, and hence that it distinguishes the living from the non-living. A living organism is nourished, grows and diminishes, through itself – from a causal origin within itself rather than from the action of external agents. A living organism must, therefore, be teleologically ordered, since (for Aristotle) nutrition and growth cannot be understood without appeal to final causation (see Teleology).

If life must be conceived teleologically, and the soul is the *primary* principle of life, then the soul is form rather than matter. For the primary principle is whatever explains our vital activities; since these are goal-directed activities, their explanation must refer to the goal-directed features of the subject, and so to the form rather than the matter. If the soul is what we live by primarily, it must be the final cause of the body, and so a formal, not a material, aspect of the subject. Soul must, therefore, be substance as form.

Aristotle attributes to the soul the features of substantial form (see §13). (1) It is a substance that is irreducible to a material non-organic body (remote matter); to that extent the soul is incorporeal, and not just some ordinary material stuff. (2) It is the source of unity that makes a heap of material constituents into a single organism. For a collection of flesh and bones constitutes a single living organism in so far as it is teleologically organized; the activities of the single organism are the final cause of the movements of the different parts. Since a single organism has a single final cause, it has a single soul and a single body. (3) The identity and persistence of the soul determine the identity and persistence of the creature that has it. If something has a soul in so far as it has life, then Socrates perishes if and only if his soul does. The truth of this Platonic claim (Phaedo 115c–e) does not imply Platonic dualism. (4) The definition of a soul must mention the proximate material subject (the organic body and its parts) whose capacities are actualized in the functions of the organism (Metaphysics 1036b28–30). A soul must be non-coincidentally connected to a specific sort of organic body (On the Soul 407b20–4).

Some of the puzzles in Aristotle's doctrine of substantial form arise in his doctrine of soul and body. If, for instance, he recognizes particular substantial forms, then he also recognizes (as the previous paragraph assumes) the individual souls of Socrates and Callias; if, however, he recognizes only one substantial form for each species, then he recognizes only one soul for human beings, another for horses, and so on.

Since the soul is the form of the living body, an account of the different 'parts' or 'capacities' (or 'faculties'; *dynamēis*) of the soul does not describe the different physiological processes underlying the different activities of a living organism, but describes their formal and goal-directed aspects. Aristotle describes the capacities that distinguish the different types of souls: nutrition (characteristic of plants), perception and appearance (characteristic of animals) and rational thought (characteristic of rational animals) (see *Psychē*). He describes some of the physiological basis of these psychic capacities in the shorter treatises on natural philosophy, including the *Parva Naturalia*, the *Movement of Animals*, and the *Progression of Animals*.

## 18. Perception

To define perception, Aristotle returns to his contrast between form and matter. Perception happens in so far as (1) the perceiver becomes like the object (On the Soul 417a18); (2) the perceiver that was potentially *F* (for example, white) becomes actually *F* when it perceives the actually *F* object (418a3); (3) the perceiver acquires the form, but not the matter, of the object (424a18–24). These descriptions express a realist view of perception and its objects; Aristotle assumes in (2) that an object is actually white, square, and so on in its own right, before we perceive it.

He is sometimes taken to imply in (1) that perception requires physical similarity; but (3) counts against this interpretation. A sense receives the form without the matter in the way in which a house without matter is in the soul of the architect before the house is built. In the latter case, nothing that looks like a house is in the builder, but features of the house correspond to features of the builder's design. Similarly, when we hear a tune, our ears do not necessarily sound like the tune, but a state of us systematically corresponds to the tune (as features of a map correspond to features of the area it maps).

A 'common sense' perceives common properties of sensible objects, such as size, shape and number, which are all perceived through the perception of motion (On the Soul 425a14–20). This is not a sixth sense independent of the other five, but the result of the cooperation of the five senses. Aristotle argues that we can explain our grasp of these common properties without supposing that they are objects of intellect rather than sense (contrast Plato, Theaetetus 184–6).

## 19. Appearance and thought

Appearance (or 'imagination'; *phantasia*) links perception to goal-directed movement. A lion sees or smells a deer; it takes pleasure in the prospect of eating the deer, and so wants to catch the deer. To connect perception with pleasure and desire, we need to say how the deer appears to the lion (as prey); this is what Aristotle calls the lion's appearance of the deer (On the Soul III 3, 7).

Aristotle denies that this appearance constitutes a belief (*doxa*). He argues that belief requires reason and inference, which non-human animals lack; in his view, they lack any grasp of a universal, and have only appearances and memory of particulars (Nicomachean Ethics 1147b4–5). The operations of sense, memory and experience are necessary, but not sufficient, for the grasp of a universal that is expressed in concepts and beliefs (Posterior Analytics II 19; Metaphysics I 1).

Concepts and beliefs require intellect (*nous*) actualized in 'understanding' or 'thinking' (*noein*; On the Soul III 4) (see Nous). Thought differs from perception in so far as it grasps universal essences – for example, what flesh is, as opposed to flesh. Perception does not include grasp of the universal as such; in grasping the universal, we recognize some feature of our experience as a ground for attributing the universal to a particular that we experience.

To explain how the mind is capable of grasping universals when we interact causally with particular perceptible objects, Aristotle distinguishes two aspects of intellect – passive and

‘productive’ (or ‘active’ or ‘agent’) – claiming that these two aspects must combine to produce thought of universals (On the Soul III 5). He does not say how productive intellect contributes to our grasp of universals. Later interpreters suggest that productive intellect abstracts the aspects relevant to the universal from the other features of particulars that are combined with them in perception (Aquinas, *Summa Theologiae* 1a q.79 a.3).

Aristotle takes the presence of this productive intellect to be necessary for any thinking at all. Moreover, he believes that productive intellect is capable of existing without a body. He still maintains his belief in the inseparability of soul from body; for since productive intellect is not a type of soul, its separate existence is not the separate existence of a soul.

## 20. Desire and voluntary action

Perception, appearance and thought are connected to goal-directed movement by means of desire. The appearance of something as desirable is the source of an animal’s tendency to pursue one sort of thing rather than another. External objects, however, appear desirable to different agents in different ways. Aristotle distinguishes the appetite (*epithymia*) that animals have from the wish (rational desire; *boulēsis*) that only rational agents have; appetite is for the pleasant and wish is for the good (On the Soul 414b2–6, 432b5–7, Politics 1253a15–18).

A rational agent’s wish differs from appetite in so far as it is guided by deliberation resting on one’s conception of one’s good. Such a conception extends beyond one’s present inclinations both at a particular time and over time. Rational agents are aware of themselves as extending into past and future. Deliberation that is guided by reference to these broader aspects of one’s aims and nature results in the rational choice that Aristotle calls ‘decision’ (*prohairesis*; Nicomachean Ethics III 3).

Agents who act on desire and appearance also act voluntarily (*hekousiōs*), in so far as they act on some internal principle (*archē*). While voluntary action is not confined to rational agents, their voluntary action has special significance, because it is an appropriate basis for praise and blame. Since it has an internal principle, it is in our control as rational agents, and therefore we are justly praised and blamed for it. We are held responsible for our actions in so far as they reflect our character and decisions (Nicomachean Ethics III 1–5).

Aristotle’s defence of his belief that we are appropriately responsible agents does not confront the questions later raised by Epicurus’ claim that responsibility is incompatible with the complete causal determination of our actions (see Epicureanism §12). An incompatibilist position is ascribed to Aristotle by Alexander in On Fate (see Alexander of Aphrodisias §4.) Aristotle neither explicitly presents an incompatibilist position nor explicitly endorses a compatibilist position of the sort later defended by the Stoics.

A discussion of time, truth and necessity (the ‘Sea Battle’; De Interpretatione 9) has suggested to some interpreters that Aristotle is an indeterminist. His opponent is a fatalist, who assumes that (1) future-tensed statements about human actions (for example, ‘There will be a sea battle tomorrow’) were true in the past, and infers that (2) the future is necessarily determined,

independently of what we choose. Aristotle certainly rejects (2). If he accepts the validity of the fatalist's argument, and rejects (1), then he accepts indeterminism.

An alternative reply to the fatalist would be to accept (1) and to deny the validity of the argument. We might argue that the past truth of statements about my actions does not imply that my actions are determined independently of my choices. If on Friday Socrates decides to walk, and he acts on his decision on Friday, then it was true on Thursday that Socrates would walk on Friday, and also true that on Friday he would act on his decision to walk, but it was not true on Thursday that he would walk whether or not he decided to (see Stoicism §21). Probably Aristotle accepts this alternative reply to the fatalist, and hence does not endorse indeterminism.

## 21. The human good

Aristotle's account of rational agents, choice, deliberation and action is an appropriate starting point for his ethical theory. Ethics is concerned with the praiseworthy and blameworthy actions and states of character of rational agents; that is why it concerns virtues (praiseworthy states) and vices (blameworthy states) (see Aretē).

Aristotle's ethical theory is mostly contained in three treatises: the *Magna Moralia*, the *Eudemian Ethics* and the *Nicomachean Ethics*. The titles of the last two works may reflect a tradition that Eudemos (a member of the Lyceum) and Nicomachus (the son of Aristotle and Herpyllis) edited Aristotle's lectures. The *Magna Moralia* is widely agreed not to have been written by Aristotle; some believe, with good reason, that it contains a student's notes on an early course of lectures by Aristotle. The *Eudemian Ethics* is now widely agreed to be authentic, and generally (not universally) and reasonably taken to be earlier than the *Nicomachean Ethics*. Three books (*Nicomachean Ethics* V–VII = *Eudemian Ethics* IV–VI) are assigned by the manuscripts to both the *Eudemian Ethics* and the *Nicomachean Ethics*.

Aristotle conceives 'ethics' (*Magna Moralia* 1181a24) as a part of political science; he treats the *Nicomachean Ethics* and the *Politics* as parts of a single inquiry (*Nicomachean Ethics* X 9). Ethics seeks to discover the good for an individual and a community (*Nicomachean Ethics* I 2), and so it begins with an examination of happiness, (*eudaimonia*). ('Wellbeing' and 'welfare' are alternative renderings of *eudaimonia* that may avoid some of the misleading associations carried by 'happiness'; see *Eudaimonia*.) Happiness is the right starting point for an ethical theory because, in Aristotle's view, rational agents necessarily choose and deliberate with a view to their ultimate good, which is happiness; it is the end that we want for its own sake, and for the sake of which we want other things (so that it is the ultimate non-instrumental good). If it is to be an ultimate end, happiness must be complete (or 'final'; *teleion*) and self-sufficient (*Nicomachean Ethics* I 1–5, 7).

To find a more definite account of the nature of this ultimate and complete end, Aristotle argues from the human function (*ergon*), the characteristic activity that is essential to a human being in the same way that a purely nutritive life is essential to a plant and a life guided by sense perception and desire is essential to an animal (*Nicomachean Ethics* I 7). Since a human being is essentially a rational agent, the essential activity of a human being is a life guided by practical reason. The good life for a human being must be good for a being with the essential activity of a

human being; hence it must be a good life guided by practical reason, and hence it must be a life in accordance with the virtue (*aretē*) that is needed for achieving one's good. The human good, therefore, is an actualization of the soul in accordance with complete virtue in a complete life. This 'complete virtue' appears to include the various virtues described in the following books of the Nicomachean Ethics; this appearance, however, may be challenged by Nicomachean Ethics X (see §26).

## 22. Virtue of character

From the general conception of happiness Aristotle infers the general features of a virtue of character (*ēthikēaretē*; Nicomachean Ethics I 13). He agrees with Plato in recognizing both rational and non-rational desires (see Plato §14). One's soul is in a virtuous condition in so far as the non-rational elements cooperate with reason; in this condition human beings fulfil their function well. The argument from the human function does not make it clear what states of a rational agent count as fulfilling the human function. Aristotle seeks to make this clearer, first through his general account of virtue of character, and then through his sketches of the individual virtues.

A virtue of character must be a 'mean' or 'intermediate' state, since it must achieve the appropriate cooperation between rational and non-rational desires; such a state is intermediate between complete indulgence of non-rational desires and complete suppression of them. (Aristotle is not recommending 'moderation' – for example, a moderate degree of anger or pleasure – in all circumstances.) The demand for cooperation between desires implies that virtue is more than simply control over desires; mere control is 'continence' (*enkrateia*) rather than genuine virtue.

The task of moral education, therefore, is to harmonize non-rational desires with practical reason. Virtuous people allow reasonable satisfaction to their appetites; they do not suppress all their fears; they do not disregard all their feelings of pride or shame or resentment (Nicomachean Ethics 1126a3–8), or their desire for other people's good opinion. Aristotle's sketches of the different virtues show how different non-rational desires can cooperate with practical reason.

## 23. Virtue, practical reason and incontinence

A virtuous person makes a decision (*prohairesis*) to do the virtuous action for its own sake. The correct decision requires deliberation; the virtue of intellect that ensures good deliberation is prudence (or 'wisdom', *phronēsis*; Nicomachean Ethics VI 4–5); hence the mean in which a virtue lies must be determined by the sort of reason by which the prudent person would determine it (1107a1–2). Virtue of character is, therefore, inseparable from prudence. Each virtue is subject to the direction of prudence because each virtue aims at what is best, as identified by prudence.

In claiming that prudence involves deliberation, Aristotle also emphasizes the importance of its grasping the relevant features of a particular situation; we need to grasp the right particulars if deliberation is to result in a correct decision about what to do here and now. The right moral choice requires experience of particular situations, since general rules cannot be applied

mechanically. Aristotle describes the relevant aspect of prudence as a sort of perception or intuitive understanding of the right aspects of particular situations (Nicomachean Ethics VI 8, 11).

These aspects of prudence distinguish the virtuous person from ‘continent’ and ‘incontinent’ people (Nicomachean Ethics VII 1–10). Aristotle accepts the reality of incontinent action (*akrasia*), rejecting Socrates’ view that only ignorance of what is better and worse underlies apparent incontinence (see Socrates §6; *Akrasia* §1). He argues that incontinent people make the right decision, but act contrary to it. Their failure to stick to their decision is the result of strong non-rational desires, not simply of cognitive error. Still, Aristotle agrees with Socrates in believing that ignorance is an important component of a correct explanation of incontinence, because no one can act contrary to a correct decision fully accepted at the very moment of incontinent action.

The error of incontinent people lies in their failure to harmonize the demands of their appetites with the requirements of virtue; their strong appetites cause them to lose part of the reasoning that formed their decision. When they act, they fail to see clearly how their general principles apply to their present situation. If their failure results from an error in deliberation, it is clear why Aristotle insists that incontinent people lack prudence.

#### **24. Choice, virtue, and pleasure**

It is initially puzzling that virtuous people decide to act virtuously for its own sake as a result of deliberation. If they decide on virtuous action for its own sake, then their deliberation causes them to choose it as an end in itself, not simply as a means. Decision and deliberation, however, are not about ends but about ‘the things promoting ends’ (*ta pros ta telē*, often rendered ‘means to ends’). Aristotle’s description of the virtuous person, then, seems to attribute to decision a role that is excluded by his explicit account of decision.

This puzzle is less severe once we recognize that Aristotle regards different sorts of things as ‘promoting’ an end. Sometimes he means (1) that the action is external and purely instrumental to the end; in this way buying food ‘promotes’ eating dinner. Sometimes, however, he means (2) that the action is a part or component of the end, or that performing the action partly constitutes the achieving of the end; in this way eating the main course ‘promotes’ eating dinner. Deliberation about this second sort of ‘promotion’ shows that an action is worth choosing for its own sake, in so far as it partly constitutes our end.

This role for deliberation explains how virtuous people can decide, as a result of deliberation, on virtuous action for its own sake; they choose it as a part of happiness, not as a merely instrumental means. Prudence finds the actions that promote happiness in so far as they are parts of the happy life. Such actions are to be chosen for their own sake, as being their own end; they are not simply instrumental means to some further end. The virtuous person’s decision results from deliberation about the composition of happiness; virtuous people decide on the actions that, by being non-instrumentally good, are components of happiness in their own right.

Aristotle's demand for the virtuous person to decide on the virtuous action for its own sake is connected with two further claims: (1) the virtuous person must take pleasure in virtuous action as such; (2) in doing so, the virtuous person has the pleasantest life. In these claims Aristotle relies on his views about the nature of pleasure and its role in happiness (Nicomachean Ethics VII 11–14, X 1–5).

He denies that pleasure is some uniform sensation to which different kinds of pleasant action are connected only causally (in the way that the reading of many boring books on different subjects might induce the same feeling of boredom). Instead he argues that the specific pleasure taken in *x* rather than *y* is internally related to doing *x* rather than *y*, and essentially depends on pursuing *x* for *x*'s own sake. Pleasure is a 'supervenient end' (1174b31–3) resulting from an activity that one pursues as an activity (*praxis* or *energeia*) rather than a mere process or production (*kinēsis* or *poiēsis*).

Aristotle insists, following Plato's *Philebus*, that the value of the pleasure depends on the value of the activity on which the pleasure supervenes (1176a3–29). The virtuous person has the pleasantest life, but the pleasantest life cannot aim exclusively at pleasure.

## **25. Virtue, friendship and the good of others**

The virtuous person's deliberation, identifying the mean in relation to different desires and different situations, is articulated in the different virtues of character (described in Nicomachean Ethics III–V). The different virtues are concerned with the regulation of non-rational desires (for example, bravery, temperance, good temper), external goods (for example, magnificence, magnanimity) and social situations (for example, truthfulness, wit). Some concern the good of others to some degree (bravery, good temper, generosity).

Aristotle's Greek for virtue of character, *ēthikē aretē*, is rendered into Latin as 'virtus moralis'. The English rendering 'moral virtue' is defensible, since the virtues of character as a whole display the impartial concern for others that is often ascribed to morality. They are unified by the aim of the virtuous person, who decides on the virtuous action because it is 'fine' (*kalon*). Fine action systematically promotes the good of others; we must aim at it if we are to find the mean that is characteristic of a virtue (1122b6–7).

A second unifying element in the virtues, inseparable from concern for the fine, is their connection to justice (V 1–2). Aristotle takes justice to be multivocal (see §4), and distinguishes general justice from the specific virtue concerned with the prevention and rectification of certain specific types of injustices. General justice is the virtue of character that aims specifically at the common good of a community. Since it is not a different state of character from the other virtues, they must incorporate concern for the common good.

To explain why concern for the good of others, and for a common good, is part of the life that aims at one's own happiness, Aristotle examines friendship (*philia*; Nicomachean Ethics VIII–IX). All three of the main types of friendship (for pleasure, for advantage and for the good) seek the good of the other person. Only the best type – friendship for the good between virtuous



people – includes *A*'s concern for *B*'s good for *B*'s own sake and because of *B*'s essential character (Nicomachean Ethics VIII 1–4).

In the best sort of friendship, the friend is 'another self'; *A* takes the sorts of attitudes to *B* that *A* also takes to *A*. Aristotle infers that friendship is part of a complete and self-sufficient life (IX 9–11). Friendship involves sharing the activities one counts as especially important in one's life, and especially the sharing of reasoning and thinking. Friends cooperate in deliberation, decision and action; and the thoughts and actions of each provide reasons for the future thoughts and actions of the other. The cooperative aspects of friendship more fully realize each person's own capacities as a rational agent, and so promote each person's happiness. Hence the full development of a human being requires concern for the good of others.

## **26. Two conceptions of happiness?**

Although Aristotle emphasizes the other-regarding, social aspects of happiness, he also advocates pure intellectual activity (or 'study', *theōria*) – the contemplation of scientific and philosophical truths, apart from any attempt to apply them to practice (Nicomachean Ethics X 6–8). The connection between the human function and human happiness (see §21) implies that contemplation is a supremely important element in happiness. For contemplation is the highest fulfilment of our nature as rational beings; it is the sort of rational activity that we share with the gods, who are rational beings with no need to apply reason to practice. Aristotle infers that contemplation is the happiest life available to us, in so far as we have the rational intellects we share with gods (see §16).

According to one interpretation, Aristotle actually identifies contemplation with happiness: contemplation is the only non-instrumental good that is part of happiness, and the moral virtues are to be valued – from the point of view of happiness – simply as means to contemplation. If this is Aristotle's view, it is difficult to see how the virtues of character are even the best instrumental means to happiness. Even if some virtuous actions are instrumental means to contemplation, it is difficult to see how the motives demanded of the virtuous person (see §§24–5) are always useful, rather than distracting, for those who aim at contemplation.

Probably, however, Aristotle means that contemplation is the best component of happiness. If we were pure intellects with no other desires and no bodies, contemplation would be the whole of our good. Since, however, we are not in fact merely intellects (Nicomachean Ethics 1178b3–7), Aristotle recognizes that the good must be the good of the whole human being. Contemplation is not the complete good for a human being.

If this is Aristotle's view, then contemplation fits the conception of happiness that is upheld in the rest of the Nicomachean Ethics and in the other ethical works. The virtues of character, and the actions expressing them, deserve to be chosen for their own sakes as components of happiness. In the virtuous person, they regulate one's choice of other goods, and so they also regulate one's choices about contemplation. The Politics may be taken to develop this conception of happiness, since (in book VII) it sets contemplation in the context of a social order regulated by the moral virtues.

## 27. Politics: ideal states

The Politics pursues three connected aims: (1) it completes the discussion of happiness, by showing what kind of political community achieves the human good (mainly books I, II and VII); (2) it sets out moral and political principles that allow us to understand and to criticize the different sorts of actual states and their constitutions (mainly books III and IV); (3) it offers some proposals for improving actual states (mainly books V and VI). The order of the books probably reflects Aristotle's aim of describing an ideal state after examining the strengths and weaknesses of actual states.

An individual's desire for happiness leads eventually to the city. A human being is a 'political animal', because essential human capacities and aims are completely fulfilled only in a political community; hence (given the connection between the human function and the human good) the individual's happiness must involve the good of fellow members of a community. The relevant sort of community is a *polis* ('city' or 'state') – a self-governing community whose proper function (not completely fulfilled by every actual political community) is to aim at the common good of its citizens, who (normally) share in ruling and in being ruled. The city is the all-inclusive community, of which the other communities are parts, since it aims at advantage not merely for some present concern but for the whole of life (Nicomachean Ethics 1160a9–30). Since happiness is complete and self-sufficient, the city is a complete and self-sufficient community (Politics 1252b28), aiming at a complete and self-sufficient life that includes all the goods needed for a happy life.

The connection between human nature, human good and the political community is most easily understood from Aristotle's account of friendship. Complete friendship, which requires living together and sharing rational discourse and thought, is restricted to individuals with virtuous characters, but this is not the only type of friendship that achieves self-realization in cooperation; a similar defence can be given for the friendship of citizens. Collective deliberation about questions of justice and benefit contributes to the virtuous person's self-realization because it extends the scope of one's practical reason and deliberation beyond one's own life and activities. Since the city is comprehensive, seeking to plan for everything that is needed for the complete good, a rational agent has good reason to want to share in its deliberations.

Since, then, Aristotle believes that political activity contributes in its own right to the human good, he argues against a 'social contract' theory that assigns a restricted instrumental function to the state (safety, or mutual protection, or the safeguarding of what justly belongs to each person; Politics III 9). Political life is to be valued for itself, apart from any instrumental benefit; the best city aims at the development of the moral virtues and at the political participation of all who are capable of them.

In the light of these aims, Aristotle describes the best city. It has to assume favourable external conditions (geographical and economic) to allow the development of political life. Its criteria for citizenship are restricted, since they exclude everyone (including women and manual labourers) whom Aristotle regards as incapable of developing the virtues of character. Within the class of citizens, however, Aristotle is concerned to avoid gross inequality of wealth. and to ensure that

everyone shares both in ruling and in being ruled. The institutions of the best state provide the political, social, economic and educational basis for the practice of the moral virtues and for contemplation.

## **28. Politics: imperfect states**

Just as a correct conception of happiness is the basis of the ideal city, various incorrect conceptions of happiness define mistaken aims for different cities. These mistaken aims underlie the different conceptions of justice that are embodied in the constitutions of different cities. Partisans of oligarchy, for instance, take happiness to consist in wealth; they treat the city as a business partnership (Politics 1280a25–31). Partisans of democracy take happiness to consist simply in the satisfaction of desire; they assume that if people are equal in the one respect of being free rather than slaves, they are equal altogether, and should have an equal share in ruling (1280a24–5). Neither view is completely mistaken, since neither wealth nor freedom is irrelevant to questions of justice, but each is one-sided.

These one-sided views cause errors about the just distribution of political power or other goods. The proper basis for assigning worth in distribution will be whatever is relevant for the common good, since that is the aim of general justice. Since a correct conception of the common good requires a correct conception of happiness, a correct answer to the question about distribution must appeal to a true conception of happiness.

The criticism of existing constitutions seeks to show both how they fall short of the norms that are met by the ideal state, and how they can be improved. Aristotle wants to describe not only the ideal state, but also the best organization of each political system. In some circumstances, he believes, economic, social, and demographic facts may make (for example) democracy or oligarchy difficult to avoid. Still, an imperfect constitution can be improved, by attention to the aspects of justice, and hence the aspects of happiness, that this constitution tends to ignore. Even when Aristotle may appear to be engaged in empirical political sociology, or to be offering hints for the survival of a particular regime, he is guided by the moral and political principles that he defends in the more theoretical parts of the Politics.

## **29. Rhetoric and poetics**

In Aristotle's classification, rhetoric and poetics (*poiētikē*; literally 'productive') count as 'productive' rather than 'practical' disciplines; they are concerned with 'production' (*poiēsis*) – purely instrumental action aiming at some external end – rather than with 'action' (*praxis*) – action that is also an end in itself. Rhetoric is a productive discipline in so far as it aims at persuasion in public speaking, and seeks the arguments, diction, language, metaphor, appeals to emotion and so on, that are most likely to persuade different types of audiences. Hence Aristotle's treatise on rhetoric contains sections on these different topics. Dialectic and logic are useful to a student of rhetoric, even though rhetoric does not aim at the truth; for true or plausible claims tend to be persuasive. Rhetoric II deals with another aspect of rhetorical persuasion, by describing the different emotions; the student of rhetoric must know how to arouse emotions in an audience.

Aristotle also takes his moral and political theory to be relevant to rhetoric, for two main reasons. (1) Rhetoric is concerned with the moral and political issues discussed in public assemblies or in courts, and the orator needs to be familiar with the convictions of a given audience. (2) Even more important, the orator should be guided by correct moral and political convictions (without necessarily grasping their philosophical basis). Aristotle does not endorse the conception of oratory as a technique of persuasion that is indifferent to the moral and political aims that it serves. This conception of oratory arouses Plato's criticism in the *Gorgias* (see Plato §7). Aristotle replies to such criticism by arguing that the orator should learn, and should be guided by, correct principles. He sets out some of these in the *Rhetoric*.

Moral and political principles are also relevant to Aristotle's treatment of literary criticism in the *Poetics*. The surviving part of this treatise deals mainly with tragedy. Some of it is similar to the *Rhetoric*, in so far as it discusses matters of technique and psychology; Aristotle describes the various sorts of plots, characters, and dramatic devices that affect the audience in different ways. He is also concerned, however, about the moral aspects of tragedy; in this he may be responding to the criticisms of tragedy in book X of Plato's *Republic*. He argues that tragedy achieves its appropriate effect when it directs pity, fear, sympathy and revulsion at the appropriate sorts of people and situations; and he examines the plots and characters of various tragedies from this point of view (see *Katharsis*; *Mimēsis*).

### **30. Influence**

Some aspects of Aristotle's philosophy have become so familiar that we do not even attribute them to him. When we say that an event was a mere 'coincidence', or that an ignorant person is 'ill-informed', or that someone's behaviour is forming good or bad 'habits', our vocabulary expresses Aristotelian assumptions, transmitted through Latin translations and interpretations.

The explicit influence of Aristotle's philosophical works and theories has been variable. In Hellenistic philosophy, he is not prominently cited or discussed (see Hellenistic philosophy); some have even doubted whether the major Stoics knew his works. From the first century bc, however, the study of Aristotle revived. This revival produced philosophers defending an Aristotelian position, often incorporating Stoic or Platonist elements, but sometimes sharpening contrasts between Aristotle and the Hellenistic schools (see Alexander of Aphrodisias; *Peripatetics*). These Aristotelians began a long series of Greek commentaries (lasting until the sixth century ad). Many of the later commentators were Neoplatonists; some of whom tried to reconcile Aristotelian with Platonic doctrines (see Aristotle Commentators; Platonism, Early and Middle §§8–9; Neoplatonism §1; Porphyry §2).

Between the sixth and the thirteenth centuries, most of Aristotle's works were unavailable in western Europe, although he was still studied in the Byzantine empire and the Islamic world (see Aristotelianism in Islamic philosophy). Two leading figures in the revival of Aristotelian studies and of Aristotelian philosophy in medieval Europe were the translator William of Moerbeke and Thomas Aquinas (see Aristotelianism, medieval). Aquinas' attempt to combine Aristotelian philosophy with orthodox Christian theology was at first rejected by ecclesiastical authority, but then came to be accepted (see Aquinas, T.).

The 'scholastic' philosophy of Aquinas and his successors is often opposed, but often presupposed, by Descartes, Locke, Hobbes and many of their successors, who often do not distinguish it from Aristotle's own philosophy. The reader who compares their representation of the scholastic position with Aristotle's own works (or with Aquinas) will often be surprised by the sharp differences between Aristotle's (and Aquinas') own positions and the positions that are attributed to him by the seventeenth-century philosophers who reject his authority (see Aristotelianism in the 17th century).

Modern historical study of Aristotle begins in the early nineteenth century. It has led to philosophical reassessment, and his works have once again become a source of philosophical insight and argument. Many of the themes of Aristotelian philosophy – the nature of substance, the relation of form to matter, the relation of mind to body, the nature of human action, the role of virtues and actions in morality – have reappeared as issues in philosophical debates, and Aristotle's contributions to these debates have influenced the course of philosophical discussion.

In some ways, Aristotle has suffered from his success. At different times he has been regarded as the indisputable authority in astronomy, biology, logic and ethics; hence he has represented the traditional position against which reformers have revolted. If he is regarded neither as the indisputable authority nor as a repository of antiquated and discarded doctrines, his permanent philosophical value can be more justly appreciated.

### **List of works**

The works of Aristotle are usually cited by conventional Latin titles, or by English translations of these titles (often mere Anglicizations rather than proper translations). This list omits: works preserved in the Aristotelian corpus, but now generally agreed to be spurious; lost works; and the Constitution of Athens (probably not by Aristotle himself; discovered after the standard arrangement of Aristotle's works was established).

Neither the absolute nor the relative dates of individual treatises can be established (see §2). The list below follows the thematic order outlined in the entry.

Recommended editions (Greek text with commentary) and translations of individual works are listed below. The standard text of most treatises appears in the Oxford Classical Texts (Oxford: Oxford University Press, various editors and dates), or, when these are lacking, in the Teubner texts (Leipzig: Teubner, various editors and dates). The Greek text, with facing English translation (not always reliable) appears in the Loeb Classical Library (Cambridge, MA: Harvard University Press and London: Heinemann, various editors and dates).

Aristotle (c. mid 4th century) *Aristotelis Opera*, ed. I. Bekker, Berlin: Reimer, 1831–70, 5 vols.

(The first modern edition of the Greek text and the source of the page and line references normally used.)

Aristotle (c. mid 4th century) *The Works of Aristotle*, ed. W.D. Ross and J.A. Smith, Oxford: Oxford University Press, 1908–54, 12 vols.

(The Oxford Translation.)

Aristotle (c. mid 4th century) *The Complete Works of Aristotle*, ed. J. Barnes, Princeton, NJ: Princeton University Press, 1984, 2 vols

(The standard English translation of the whole corpus; contains the revised Oxford Translation.)

Aristotle (c. mid 4th century) *The Basic Works of Aristotle*, ed. R. McKeon, New York: Random House, 1941.

(A selection from the Oxford Translation.)

Aristotle (c. mid 4th century) *A New Aristotle Reader*, ed. J.L. Ackrill, Oxford: Oxford University Press, 1984.

(Selections from existing translations.)

Aristotle (c. mid 4th century) *Aristotle: Selections*, trans. G. Fine and T. Irwin, Indianapolis, IN: Hackett, 1995.

(New translations with notes.)

## **Logic**

Aristotle (c. mid 4th century) *Categories (Categoriae)*, trans. J.L. Ackrill, Clarendon Aristotle Series, Oxford: Oxford University Press, 1963.

(Outline of the theory of categories.)

Aristotle (c. mid 4th century) *On Interpretation (De Interpretatione)*, trans. J.L. Ackrill, Clarendon Aristotle Series, Oxford: Oxford University Press, 1963.

(Thought, language and logic.)

Aristotle (c. mid 4th century) *Prior Analytics (Analytica Priora)*, trans. R. Smith, Indianapolis: Hackett, 1989.

(Deductive logic: the theory of the syllogism.)

Aristotle (c. mid 4th century) *Posterior Analytics (Analytica Posteriora)*, trans. J. Barnes, Clarendon Aristotle Series, Oxford: Oxford University Press, 2nd edn, 1993.

(The theory of demonstration: the structure of knowledge.)

Aristotle (c. mid 4th century) *Topics (Topica)* trans. A.W. Pickard-Cambridge in *The Complete Works of Aristotle*, ed. J. Barnes, Princeton, NJ: Princeton University Press, 1984, 2 vols, 167–314.

(The theory, strategy and tactics of dialectical argument.)

## **Natural philosophy**

Aristotle (c. mid 4th century) *Physics (Physica)*, ed. W.D. Ross, in *The Works of Aristotle*, Oxford: Oxford University Press, 1949; Books I–II, trans. W. Charlton, Clarendon Aristotle

Series, Oxford: Oxford University Press, 1970; Books III–IV trans. E.L. Hussey, Clarendon Aristotle Series, Oxford: Oxford University Press, 1983.

(General principles of natural philosophy – form, matter, explanation – and their application to motion, infinity, place and time.)

Aristotle (c. mid 4th century) *On the Heavens* (*De caelo*), Books I–II trans. S. Leggett, Warminster: Aris & Phillips, 1995.

(Cosmology: application of Aristotle's theory of motion to the four elements and their interaction in the universe.)

Aristotle (c. mid 4th century) *Generation and Corruption* (*De generatione et corruptione*), ed. H.H. Joachim, Oxford: Oxford University Press, 1922; trans. C.J.F. Williams, Clarendon Aristotle Series, Oxford: Oxford University Press, 1982.

(Account of change in natural substances; alteration, growth, coming-to-be and perishing; matter and the four elements.)

Aristotle (c. mid 4th century) *Meteorology* (*Meteorologica*), trans. H.D.P. Lee, Loeb Classical Library, Cambridge, MA: Harvard University Press and London: Heinemann, 1952.

(Collection of observations on winds, tides and other aspects of inanimate nature.)

Aristotle (c. mid 4th century) *History of Animals* (*Historia animalium*) trans. A.L. Peck, Loeb Classical Library, Cambridge, MA: Harvard University Press and London: Heinemann, 1965–91, 3 vols.

(Collection of observations on different kinds of animals and their behaviour, providing a basis for Aristotle's biological explanations.)

Aristotle (c. mid 4th century) *Parts of Animals* (*De partibus animalium*), Book I, trans. D.M. Balme, Clarendon Aristotle Series, Oxford: Oxford University Press, 1972.

(Introduction to the study of animals; explanation of physiology, organs and behaviour, in light of Aristotle's explanatory scheme.)

Aristotle (c. mid 4th century) *Generation of Animals* (*De generatione animalium*), trans. A.L. Peck, Loeb Classical Library, Cambridge, MA: Harvard University Press and London: Heinemann, 1942.

(Application of Aristotle's explanatory scheme to reproduction and heredity.)

Aristotle (c. mid 4th century) *On the Movement of Animals* (*De motu animalium*), ed. and trans. M.C. Nussbaum. Princeton, NJ: Princeton University Press, 1978.

(Physiology and psychological explanation of animal movement.)

Aristotle (c. mid 4th century) *On the Progression of Animals* (*De incessu animalium*), trans. E.S. Foster, Loeb Classical Library, Cambridge, MA: Harvard University Press and London: Heinemann, 1937.

(Physiology of animal movement.)

## **Metaphysics**

Aristotle (c. mid 4th century) *Metaphysics* (*Metaphysica*), ed. W.D. Ross, Oxford: Oxford University Press, 1924, 2 vols; Books IV–VI, trans. C.A. Kirwan, Clarendon Aristotle Series, Oxford: Oxford University Press, 1971; Books VII–VIII trans. D. Bostock, Clarendon Aristotle Series, Oxford: Oxford University Press, 1994; Books XIII–XIV trans. J. Annas, Clarendon Aristotle Series, Oxford: Oxford University Press, 1976.

(Collection of treatises centred on the ‘science of being’, especially substance, form and matter, potentiality and actuality, culminating in theology.)

## **Psychology**

Aristotle (c. mid 4th century) *On the Soul* (*De anima*), ed. R.D. Hicks, Cambridge: Cambridge University Press, 1907; Books II–III trans. D.W. Hamlyn, Clarendon Aristotle Series, Oxford: Oxford University Press, 1968.

(Application of theory of form and matter to questions about soul and body; perceptio, thought and action.)

Aristotle (c. mid 4th century) *Short Natural Treatises* (*Parva naturalia*), ed. W.D. Ross, Oxford: Oxford University Press, 1955.

(Short essays, physiological and psychological, on themes connected with *On the Soul*.)

## **Ethics**

Aristotle (c. mid 4th century) *Nicomachean Ethics* (*Ethica Nicomachea*) commentary by J.A. Stewart, Oxford: Oxford University Press, 1892, 2 vols; trans. T.H. Irwin, Indianapolis, IN: Hackett, 1985.

(Normally regarded as Aristotle’s most important contribution to moral philosophy.)

Aristotle (c. mid 4th century) *Eudemian Ethics* (*Ethica Eudemia*), Books I–II trans. M.J. Woods, Clarendon Aristotle Series, Oxford: Oxford University Press, 1982.

(Similar in content to the *Nicomachean Ethics*, though different in important details. Normally regarded as an earlier version of Aristotle’s ethical theory.)

Aristotle (c. mid 4th century) *Great Ethics* (*Magna moralia*), trans. G. Stock, in *The Complete Works of Aristotle*, revised Oxford Translation, ed. J. Barnes, Princeton, NJ: Princeton University Press, 1984, 2 vols, 1868–1991.

(The standard English translation of the whole corpus; contains the revised Oxford Translation.)



## **Politics**

Aristotle (c. mid 4th century) *Politics* (*Politica*), ed. W.L. Newman, Oxford: Oxford University Press, 1887–1902, 4 vols; Books I–II trans. T.J. Saunders, Clarendon Aristotle Series, Oxford: Oxford University Press, 1995.

(Aristotle's major work in political theory, including ethics, history and sociology; examines the imperfections of actual states and proposes an ideal state.)

## **Rhetoric and Poetics**

Aristotle (c. mid 4th century) *Rhetoric* (*Rhetorica*), ed. E.M. Cope, Cambridge: Cambridge University Press, 1877, 3 vols; trans. G. Kennedy, *Aristotle on Rhetoric: A Theory of Civic Discourse*, New York: Oxford University Press.

(The theory and practice of public speaking, based on Aristotle's logic, dialectic, psychology, ethics and political theory.)

Aristotle (c. mid 4th century) *Poetics* (*De arte poetica*), ed. D.W. Lucas, Oxford: Oxford University Press, 1968; trans. R. Janko, Indianapolis, IN: Hackett, 1987.

(Analysis of poetry (in the surviving part of the treatise, tragic drama) from linguistic, stylistic, psychological, and moral points of view.)

## **References and further reading**

Ackrill, J.L. (1981) *Aristotle the Philosopher*, Oxford: Oxford University Press.

(This and Barnes (1982) are the best short introductions.)

Barnes, J. (1982) *Aristotle*, Oxford: Oxford University Press.

(Along with Ackrill (1981), one of the best short introductions to Aristotle.)

Barnes, J. (1994) *The Cambridge Companion to Aristotle*, Cambridge: Cambridge University Press.

(Good bibliography.)

Barnes, J., Schofield, M. and Sorabji, R. (1975–9) *Articles on Aristotle*, London: Duckworth, 4 vols.

(Good collections of essays, including translated selections from non-English works; full bibliographies.)

Bonitz, H. (1870) *Index Aristotelicus*, Berlin: Reimer.

(Outstandingly useful guide to Aristotle's vocabulary.)

Broadie, S.W. (1991) *Ethics with Aristotle*, Oxford: Oxford University Press.

(This and Hardie (1980) are the best general guides to the Ethics; Hardie is more accessible to a beginner.)

Charles, D. (1984) Aristotle's Philosophy of Action, London: Duckworth.

(Detailed and sophisticated discussion, focusing on Physics and Ethics.)

Fine, G. (1993) On Ideas, Oxford: Oxford University Press.

(On Aristotle's criticism of Plato.)

Furley, D.J. and Nehamas, A. (1994) Philosophical Essays on Aristotle's Rhetoric, Princeton, NJ: Princeton University Press.

(Collection of essays; this and Rorty (1995) provide a survey of recent work on the Rhetoric.)

Furth, M. (1988) Substance, Form, and Psychē, Cambridge: Cambridge University Press.

(Furth, Lewis (1991), Loux (1991) and Witt (1989) provide a guide to debates about the Metaphysics, especially Books VII–IX.)

Gotthelf, A. and Lennox, J. (1987) Philosophical issues in Aristotle's Biology, Cambridge: Cambridge University Press, 1987.

(Collection of essays.)

Hardie, W.F.R. (1980) Aristotle's Ethical Theory, Oxford: Oxford University Press, 2nd edn.

(Alongside Broadie (1991), one of the best general guides to the Ethics.)

Irwin, T.H. (1988) Aristotle's First Principles, Oxford: Oxford University Press.

(This and Lear (1988) explore themes connecting several aspects of Aristotle's philosophy.)

Irwin, T.H. (1995) Classical Philosophy, vols 5–7, New York: Garland.

(Collection of essays on Aristotle.)

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